

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A ferro-electric memory device comprising: a semiconductor substrate;

a first transistor formed on the semiconductor substrate; ~~and~~

a first ferro-electric capacitor electrically connected to the first transistor and formed of a first capacitor material layer having a first lower electrode, a first ferro-electric film, and a first upper electrode, the first ferro-electric capacitor being thicker at its central portion than at its ends; and

a first insulating film formed on the first transistor and the semiconductor substrate and having a groove with curved sides, and wherein the first ferro-electric capacitor is provided in the groove.

2. (Original) The ferro-electric memory device according to claim 1, wherein the first ferro-electric capacitor has a bowl shape with a curved top surface.

3. (Canceled)

4. (Currently Amended) The ferro-electric memory device according to claim 1, wherein the first lower electrode is formed of a material having an oxygen diffusion prevention effect.

5. (Original) The ferro-electric memory device according to claim 1, further comprising:

a second transistor formed on the semiconductor substrate; and

a second ferro-electric capacitor electrically connected to the second transistor and formed of a second capacitor material layer having a second lower electrode, a second ferro-electric film, and a second upper electrode, the second ferro-electric capacitor being thicker at its central portion than at its ends, and

wherein a first cell in which the first upper electrode and the first lower electrode are electrically connected in parallel with first sources/drains of the first transistor is electrically connected in series with a second cell in which the second upper electrode and the second lower electrode are electrically connected in parallel with second sources/drains of the second transistor.

6. (Original) The ferro-electric memory device according to claim 5, further comprising:

a first contact provided adjacent to the first upper electrode to electrically connect the first upper electrode and one of the first sources/drains; and

a second contact provided adjacent to the second upper electrode to electrically connect the second upper electrode and one of the second sources/drains.

7. (Original) The ferro-electric memory device according to claim 6, wherein the first upper electrode covers the first lower electrode, and the second upper electrode covers the second lower electrode.

Claims 8-18. (Canceled)